



Amusement device.

#### DESCRIPTION

The invention relates to an amusement device comprising a vehicle that can be moved over an elongated track as well as a track portion that can be moved jointly with said vehicle from a first, relatively low position to a second, relatively high position, or vice versa, which track portion can connect to said elongated track.

With an amusement device of this kind as known from German patent application DE-A1-198.16.768, a vehicle is moved jointly in vertical direction with a movable track portion from a first, relatively low position to a second, relatively high position. Near said high position, the movable track portion connects to the elongated track. An advantage of such a known amusement device is the fact that the base area required for moving the vehicle from the relatively low position to the relatively high position is comparatively limited.

Once the vehicle has been moved to the relatively high position, the vehicle is moved over the track under the influence of the force of gravity. The track may be designed to have various curves, such as bends, loops, so-called corkscrews etc. Once the vehicle has completed its path over the track, it is returned to the aforesaid relatively low position, from where it is moved to the aforesaid higher position again.

One drawback of the known amusement device is the fact that the movement in vertical direction of the track portion is not experienced as very spectacular by a person present in a vehicle present on said track portion.

The object of the invention is to provide an amusement device in which the vehicle can be moved to a different height position in a relatively simple manner, which movement is in addition comparatively interesting.

This objective is accomplished with the amusement device

according to the invention in that the track portion extends substantially horizontally in said first position, whereas the track portion extends at an angle to the horizontal in said second position.

Since the track portion includes an angle with the horizontal near the second, higher position, a greater sense of excitement is experienced near said relatively high position. In addition, this arrangement makes it possible to move the vehicle over the track under the influence of the force of gravity directly after the track portion has connected to the track. As a result, no additional measures are required near said relatively high position for moving the vehicle off the track portion and onto the track.

One embodiment of the amusement device according to the invention is characterized in that the track portion extends substantially horizontally in said first position, whereas the track portion extends substantially vertically in said second position.

In this way persons can board the vehicle in the first horizontal position, after which the track portion is moved upwards in substantially vertical direction together with the vehicle. Subsequently, the track portion and the vehicle are jointly tilted near said second position, to a position in which the track portion extends substantially vertically. From said position the vehicle is released to be moved over the track.

Since the track portion can be moved substantially vertically upwards, the base area required for moving the vehicle upwards is comparatively limited.

Another embodiment of the amusement device according to the invention is characterized in that the track portion can be moved along a rail, during which movement the track portion extends substantially perpendicularly to the rail.

This makes it possible to move the track portion between said first and said second position in a relatively simple manner.

Yet another embodiment of the amusement device according to the invention is characterized in that the track portion can be moved by means of a cable that can be wound onto a drum.

5 The track portion can be moved from the first position to the second position in a relatively simple and reliable manner by means of a cable that can be wound onto said drum. Once the vehicle has been moved to the second position by means of the track portion, said track portion can furthermore be returned to the first position in a simple manner by means of the cable that can be wound onto said drum.

10 Yet another embodiment of the amusement device according to the invention is characterized in that the amusement device is provided with a device which comprises a number of pulleys and a safety cable passed over said pulleys, the two ends of which safety cable are connected to the movable track portion, whilst the pulleys can be moved 15 by means of a piston-cylinder combination.

In this way the track portion is attached to the safety cable in a reliable manner. If the driving system of the track portion should fail, undesirable downward movement of the track portion will be prevented in a simple manner by the safety device. In addition, a 20 permanent force can be exerted on the track portion by means of the piston-cylinder combination, which force forms a counterweight, as it were, for the weight of the track portion, possibly augmented with the weight of the vehicle to be moved. As a result of the presence of said counterweight, the force required for moving the track portion is 25 relatively small.

The invention will be explained in more detail hereinafter with reference to the drawings, in which:

Figure 1 shows a first embodiment of an amusement device according to the invention;

30 Figure 2 shows a second embodiment of an amusement device according to the invention;

Figure 3 shows a third embodiment of an amusement device according to the invention;

Figure 4 shows a fourth embodiment of an amusement device according to the invention;

5 Figure 5 shows a safety device of the amusement device according to the invention; and

Figure 6 shows a part of the safety device that is shown in Figure 5.

Like parts are indicated by the same numerals in the 10 various Figures.

Figure 1 is a side elevation of an amusement device 1 according to the invention, comprising an elongated track 2 over which a vehicle 3 can be moved. The elongated track 2 comprises a substantially vertical track portion 4, which blends, near a bottom side thereof, via a 15 curved track portion 5, with a track portion (not shown) that is connected with an end thereof remote from the track portion 5 to a horizontal track portion 6, at which a boarding station 7 is present.

The amusement device 1 according to the invention furthermore comprises a tower 8 disposed between the track portion 4 and 20 the track portion 6, which tower is provided with a rail 9 comprising a substantially vertical rail portion 10 and a quarter-circular rail portion 11 connecting thereto. An end of the rail portion 11 remote from the rail portion 10 is disposed near an end of the track portion 4 remote from the track portion 5.

25 A track portion 12 can be moved over said rail 9. The track portion 12 is supported on the rail portion 10 via a support 13. The track portion 12 connects to the track portion 6 in the position I that is illustrated in full lines in Figure 1. The tower 8 is provided with a driving system 14, which comprises a cable 16 that can be wound onto a 30 drum 15, which cable 16 is connected to the track portion 12 via rollers 17 and the rail 9. The driving system 14 furthermore comprises a

cable 18 that can be wound onto the drum 15, which cable is connected to the track portion 12 via rollers 19.

5 The tower 8 of the amusement device 1 is furthermore fitted with a safety device 20 comprising a piston-cylinder combination 21, which is rigidly connected to the tower 8 with an end 22 thereof. An end 23 of the piston-cylinder combination 21 remote from the end 22 is connected to a part comprising a number of pulleys. A cable 25 is passed over said pulleys 24, which cable is connected to the track portion 12 with both of its ends 26 (see Figure 5).

10 The operation of the amusement device 1 will now be explained in more detail.

15 At the boarding station 7, passengers board the vehicle 3 that is present at said station. Then the vehicle 3 is moved over the track portion 6 to the track portion 12 by driving means (not shown) or under the influence of the force of gravity. Once the vehicle 3 is present on the track portion 12, it is interlocked with the track portion 12.

20 Following that, the drum 15 is rotated, causing the cable 16 to be wound onto the drum and the track portion 12 to be moved upwards over the rail 9, in the direction indicated by the arrow P1, from the position indicated at I to the position indicated at II via the positions located therebetween. While the cable 16 is being wound onto the drum 15, the cable 18 is simultaneously unwound from said drum 15. Moreover, the piston-cylinder combination 21 is actuated by means of gas 25 from the gas cylinders 21 when the track portion 12 is being moved upwards, as a result of which the pulleys 24 are moved in the direction indicated by the arrow P2 (see Figure 6). The cable 25 is kept at a constant tension by the action of the piston-cylinder combination 21. Moreover, a force is exerted on the track portion 12 by means of the 30 piston-cylinder combination 21, which force forms a counterforce or counterweight, as it were, for the weight of the track portion 12 and the

vehicle 3 that is present thereon. If the cable 16 should break, the cable 25 will stop the track portion 12 and the vehicle 3 present thereon in such a manner as to prevent the track portion 3 from returning to the position I uncontrolledly at a relatively high velocity. The track portion 5 is slowly returned to the position I by means of the piston-cylinder combination 21.

After the track portion 12 and the vehicle 3 present thereon have been moved to the position II by means of the driving mechanism 14, the locking engagement between the vehicle 3 and the track portion 12 is released, whereupon the vehicle 3 will start to move over the track portion 4. Once the vehicle 3 has been transferred from the track portion 12 to the track portion 4, the drum 15 is driven in reverse direction, as a result of which the cable 18 will be wound onto the drum and the track portion 12 will be moved in the opposite direction of the arrow P1 from the position II to the position I. At the same time, the cable 16 is unwound from the drum 15.

Since the track portion 12 of the amusement device 1 according to the invention is moved substantially vertically upwards, the area required for moving the vehicle 3 from the position I to the 20 position II is relatively small. In addition, any difference in height between the positions I and II that may be desired can be realised in a simple manner by adapting the height of the tower 8.

Figure 2 shows a second embodiment of an amusement device 30 according to the invention, which comprises a rail 31 and a 25 track portion 32 that can be moved over said rail 31. Unlike the amusement device 1 that is shown in Figure 1, the track portion 32 is not positioned on one side of the rail in this embodiment, but it extends on either side of the rail 31. The rail 31 comprises a substantially vertical portion 33 near an upper side thereof and a curved portion 34 connecting thereto. The track portion 32 and the vehicle 3 present thereon can be moved from a relatively low position I to a relatively 30

high position II. In said position II, the track portion 32 and the vehicle 3 present thereon extend substantially vertically. The track portion 32 connects to a track portion 4 of the track 2 near a connecting line 35. Once a proper connection between the track portion 32 and the track portion 4 has been effected, the locking engagement between the vehicle 3 and the track portion 32 is released and the vehicle will start to move to the track portion 6 via the track portion 4 and the track portion 5.

Figure 3 shows a third embodiment of an amusement device 40 according to the invention, in which the vehicle 3 is present on a bottom side of the track portion 32 rather than on an upper side of said track portion 32. The track portion is moved in upward direction together with the vehicle 3 in the same manner as described with reference to Figure 2, however, and subsequently tilted through 90°, after which the vehicle 3 can be moved over the track 2.

Figure 4 shows a fourth embodiment of an amusement device 50 according to the invention in which, unlike the amusement device 1 that is shown in Figure 1, the track portion 6 connects to the track portion 12 from the left-hand side rather than from the right-hand side. A vehicle 3 moving over the track portion 6 in the direction indicated by the arrow P3 will be moved over the track portion 4 after being taken from position I to position II by means of the movable track portion 12. The part of the vehicle 3 that formed the front end during said movement over the track portion 6 will form the rear end during the movement of the vehicle 3 over the track portion 4. Thus the direction of movement of the vehicle 3 can be changed in a simple manner.

It is also possible to have the track portion 4 include a considerable angle with the vertical, so that the descent along the track portion 4 will be less fast.

Furthermore it is possible to move the track portion 12 only vertically upwards, in which case the track portion 12 and the

vehicle 3 present thereon will be tilted about an axis near the upper position II, thus achieving a connection to a track portion 4. In this way it is possible to further reduce the base area required for moving the vehicle 3 in upward direction.

5 It is also possible to use other safety devices, for example mechanical safety devices, for preventing the track portion from moving downwards undesirably.

10 Any guide that corresponds to or deviates from the rest of the track as regards its construction and structure may be used as the track portion by means of which a vehicle can be moved from a first position to a second position.

It is also possible to move the vehicle from the upper position to the lower position by means of the track portion in an amusement device.

15 According to another possibility, the track portion may include an angle in the order of 30-90° with the horizontal near said high position, as a result of which the vehicle present on said track portion will directly start to move over the track from said track portion, in which case the persons present in the vehicle will experience 20 some form of excitement during the upward movement already, due to the tilting movement of the track portion on which the vehicle is present.